

# The competition between China and Korea for export markets in Latin America: an analysis by technological categories<sup>1</sup>

Gilberto Libânio<sup>2</sup>

Diana Chaib<sup>3</sup>

**Abstract:** The proposed study aims to investigate the competition between China and Korea for export markets in Latin America, between 2001 and 2019. The paper builds an index of exports quality, based on the classification of exports by technological intensity. In addition, we calculate an index of competition between Korea and China in Latin American markets. Then, we estimate an exports function for Korean exports to Latin America by using dynamic panel-data analysis. The results suggest a negative impact of the Chinese exchange rate and of competition between China and Korea on Korean exports and a positive impact of the Latin American countries' GDP on Korean exports.

**Keywords:** exports, exchange rate, China, Korea, panel data.

**JEL classification:** F14; O33

**Área temática:** 5. Relações Econômicas Internacionais.

## 1. Introduction

---

<sup>1</sup> Pesquisa financiada pela Korea Foundation – Policy-Oriented Research Program Grant.

<sup>2</sup> Professor adjunto do Departamento de Ciências Econômicas e do CEDEPLAR/UFMG. Doutor em Economia pela University of Notre Dame, EUA (2006).

<sup>3</sup> Doutoranda em Economia pelo CEDEPLAR/UFMG.

Trade between Korea and Latin American countries have grown at an average annual rate of 13% between 2000 and 2013. In 2013, the region absorbed 6% of Korean exports and originated 3.5% of its imports (ECLAC, 2015). In absolute terms, Korea exported approximately US\$ 27 billion to Latin America in 2018. Also, Korea presents a growing trade surplus with the region over the last two decades.

There is large potential for increasing cooperation and trade between Korea and Latin America, given the complementarity between their economies. Thus, there are many opportunities for the diversification of bilateral trade in the coming years. As an initial effort in that direction, free trade agreements have been signed between the Republic of Korea and three countries in the region: Chile, Peru and Colombia (ECLAC, 2015).

On the other hand, China has increased its role in international trade over the last two decades, and has also changed its exports profile towards more technologically sophisticated goods (Naughton, 2018). As a consequence of such developments, China has increased its competition with Korea's exports in third markets. According to the Korea Institute for Industrial Economics & Trade (KIET), 37 percent of South Korea's and China's export items are currently overlapping with each other as China's export industry structure shifts toward capital- and technology-intensive sectors. In particular, China has increased its share of exports and imports in Latin America, and it is now the main trade partner for several countries in the region.

Taking into account the increasing competition between Korea and China in third markets, the proposed study aims to investigate the competition between the two countries for export markets in Latin America. In particular, it examines the evolution of exports from Korea and from China to twelve major Latin American countries between 2001 and 2019, in order to estimate the impact of China's competition in Korea's exports to the region. The twelve countries in our sample are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela, and they represent 93% of the total GDP in the Latin America in 2019 (according to the ECLAC database).

The main questions this paper aims to address are: do Korea and China have similar sectoral composition of exports to Latin America? How has this similarity evolved over time? How have Korean exports to Latin America been impacted by the increasing competition from China in the last two decades? What is the impact of changes in the Chinese exchange rate in the value of Korean exports to Latin America?

One of the most important aspects of this study relates to the fact that the impacts of the increasing competition from China may not be evenly distributed across the globe, due to differences of trade profiles between countries or regions. Therefore, analyses that are able to address such regional specificities may be very relevant for trade and industrial policies designed to improve Korea's export performance in Latin America.

The remainder of the paper is organized as follows. Next section presents a brief literature review about the growing importance of China in international trade and, in particular, about the competition between Korea and China for export markets in Latin America. Section three describes the data, and presents the classification of exports by technological intensity, the index of competition between Korea and China, and the methodology used for estimating the exports function. In section four, we calculate the export quality index for Korea and China between 2001 and 2019, and the index of export competition between these two countries over time. Section four also presents the estimated effects of the China-Korea competition and of the Chinese exchange rate on the value of Korean exports to Latin America. In the last section, we present the conclusions and policy implications of the study.

## **2. Literature review**

In this section, we provide a brief review of the related literature that emphasizes the impacts of China's expansion in international trade, especially in Latin America, and the competition between Korea and China for export markets.

We can start with the literature about the classification of exports by technological intensity. Lall (2000) examines the evolution of manufactured exports from developing countries, using a detailed classification by technological levels. The classification proposed by Lall (2000) divides exports into five groups of products, namely: (i) Primary products (PP): little or no processing; (ii) Resource-based manufactures (RB): generally simple, labor-intensive products, but there are also segments that use capital-, scale-, and skill-intensive technologies; (iii) Low-technology manufactures (LT): products that use stable and well-diffused technology, usually embodied in capital equipment; (iv) Medium-technology manufactures (MT): it represents a crucial segment of the industrial activity in developed economies, and comprises the majority of skill- and scale-intensive technologies in intermediate and capital goods; (v) High-technology manufactures (HT): advanced technology products in rapid evolution, characterized by high R&D investments and emphasis on product design.

Libanio (2012) examines the impacts, on Brazilian states, of China's expansion in international trade. First, the pattern of export specialization of Brazilian states was analyzed in comparison to the one of China, by calculating coefficients of specialization (Blazquez-Lidoy *et al.*, 2006). Then, the correlation between these coefficients and economic growth rates for the period 1996-2009 was investigated. Results suggest that economic growth in Brazilian states has been strongly influenced by the degree of complementarity in relation to the Chinese exports, and its growing demand of agricultural and mineral commodities. Thus, Brazilian states that produce and export raw materials tended to grow above the national average between 2000 and 2009.

Kim (2020) presents the need for Korea to diversify the destination of its exports, reducing the dependence on sales to the USA and to China. As a way of studying possible alternative export markets for Korean products, Brazil is analyzed by the author, considering factors such as the relevance of the Latin America as an emerging market, the high growth of Korean exports to Brazil, the low trade interdependence and asymmetry between Korea and Brazil. The paper also emphasizes that the bilateral relationship is mostly economic and commercial, and less complex in political-diplomatic terms than the ones with the USA and China. The results of empirical sectoral analysis on the Brazilian market indicate that there are some attractive markets in which Korea has the potential to intensify its exports to Brazil.

Nonnenberg (2013) aims to compare the performance of Latin American and South-Southeast Asia countries over the past three decades with respect to technological intensity of their exports. The main contribution of this paper is to construct an indicator of technological intensity to allow adequate measurement of the degree of knowledge content of exports from both regions. This indicator was calculated for all sample countries for the period 1983-2008, based on data from Comtrade/WITS. It clearly shows how Asian countries present a much higher technological intensity of their exports, when compared to Latin American countries.

About the trade competition between these countries and the impacts the growing importance of China in international trade we can emphasize Blazquez-Lidoy *et al* (2006), Baak (2014), Greenaway, Mahabir and Milner (2010) and Mattoo, Mishra and Subramanian (2017).

Blazquez-Lidoy *et al* (2006) analyze China's trade impact on Latin American countries. They use two indices of trade competition to compare the impact of China on 15 Latin American countries during the period 1998-2004. In general terms, the results suggest that there is little trade competition between China and Latin America in the United States market during the period.

Baak (2014) examines the competition between Chinese and Korean machinery exports in the Japanese market, by employing a structural model and panel data of 16 machinery products from 2000 to 2012. His findings suggest that China and Korea compete in exporting higher technology goods.

Greenaway, Mahabir and Milner (2010) explore whether and how the growth of China's exports displaced exports of other Asian countries to third markets over the period 1990–2003. Over this period, China's surge in exports did appear to displace its neighbors' exports to third markets, with a 1% increase leading to 0.07% drop in Asian countries' exports. The results provide evidence of displacement of Asian countries exports to third markets, although to a relatively small order of magnitude overall. The effect is increasing over time and greater in more industrialized country markets.

Mattoo, Mishra and Subramanian (2017) investigate how China's exchange rate affects the exports of developing countries to third markets. They included product- and destination-specific indices of competition between China and developing country competitors over the 2000-2014 period and reported that a country's exports of products that compete with China increase when the Renminbi appreciates.

About the trade relations between China and Korea with Latin American countries we can focus in the next. Gallagher and Porzecanski (2009) analyze the extent to which Chinese demand enhanced the performance of Latin American economies in the 2000s. Their findings suggest that China had a significant direct and indirect impact on Latin American exports, but only in a handful of countries and sectors.

Barbosa (2020) examines the trade patterns between China and some central and peripheral regions in the period 2000-2016. The main purpose of this study is to stress the unfolding of different trade patterns in the countries of Latin America. Barbosa (2020) considers that the rise of China and the models of international integration of Latin American countries have led to a process of disintegration and fragmentation of the region in economic terms, thus bringing about new dilemmas for the development of the countries in the region. Similarly to Barbosa (2020), Bekerman, Dulcich and Moncaut (2013) examine the expansion of economic relations between China and Latin American countries and consider that it may offer opportunities in the short term, as seen in exports of primary products and improved terms of trade. However, it also means challenges for the long term, which if not properly confronted, can lead to worse structural external vulnerability. In this research, they analyze the impacts that affect directly and indirectly the Latin American countries that trade with China, and particularly the cases of Argentina and Brazil. In general, they consider that the importance of these countries as suppliers of food, oil and other primary goods, essential for sustaining the growth of the Chinese economy, generated dynamic effects for these countries, such as the expansion of exports and a sharp improvement in the international prices of some primary products.

Medeiros and Cintra (2015) analyze the presence of China and the influence of its recent economic growth in selected countries in Latin America in the last decade. The paper focuses on different Chinese interests for Latin America, on the analysis of trade flows between China and selected L.A. countries, in the influence China has had on the commodity global price increases and on Chinese investments and loans to the region, in order to clarify which Latin American countries and sectors benefit or lose with the increasing presence of China in Latin America.

ECLAC (2015) describes Korea's development process and provides a detailed account of the trade relations between Korea and Latin American countries from 2000 to 2013. The report finds that Korea has been able to expand its exports to Latin America during the period, and also that Latin American exports to Korea are highly concentrated in a few countries, products and companies, and are chiefly made up of primary goods.

Prazeres, Bohl and Zhang (2021) aim to answer some questions like: What will China-LAC trade look like in 2035? How important will China be for LAC exports and imports? How will the sectoral composition of China-LAC trade evolve in fifteen years' time? For this, the report explores four alternative scenarios of China-LAC trade out to 2035, highlighting the most interesting outcomes and implications. A key finding of the research is that China is still gaining ground in LAC trade, and is likely to continue to do so through 2035. The scenarios estimate that, by then, China's participation in overall LAC trade may range from 15 to 24 percent. In many cases, increased trade dependence on China could translate into reduced dependence on the United States. Across all four scenarios presented in the paper, the United States relevance as a destination of LAC exports declines.

Lastly, we emphasize the competition effects of the exports between Korea and China.

Thorbecke (2017) examines whether Korea and China compete in exporting lower-technology goods, and the impact of exchange rate shocks. His results indicate that a depreciation of the Renminbi leads to a large decrease in Korean lower-technology exports.

Eum (2019) examines the impact of changes in Chinese exchange rate on Korean exports taking into account the characteristics of the exported products. The empirical evidence provided in the paper is based on import data of OECD countries from 2002 to 2014. Eum uses three different indices to measure the substitutability and complementarity between products from Korea and China. The results suggest that Korea's exports to OECD countries of the products that have a greater degree of competition fall more intensively as the Renminbi depreciates. However, once quality differences between Korean and Chinese products are considered in the estimation, the negative impact from the depreciation of the Chinese Renminbi turns out to be negligible.

La and Shin (2019) investigate the competition effects of the exports between Korea and China in their common-export markets considering market sophistication. Using an empirical analysis to identify the demand for product quality across countries, the paper estimates the effects of market sophistication on the competition between Korean exports and Chinese products. They consider 61 common markets for Korea and China during the period 2003–2010. Their main findings can be summarized as follows: the negative effects of the competition between Korea and China on Korea's exports to third markets are stronger where consumers are less sophisticated. On the other hand, the negative effects diminish when a third market possesses a high demand for quality, novelty, design, brand or eco-friendliness.

In broad lines, an overview of the literature shows some relevant elements for the analysis proposed here. First, it is clear that China has increased its role as an exporter of goods to Latin America in the past two decades – not only in terms of the total value of exports, but also in terms of its composition, towards more sophisticated sectors. Second, the literature suggests that competition between Korea and China has increased as a consequence of the Chinese expansion. Third, exchange rates have a role to play in terms of competitiveness. And last, but not least, the role of exchange rate is less important when there is larger product differentiation – which is expected considering the importance of non-price competitiveness. The following sections of this paper will address some of these issues for the case of Latin America between 2001 and 2019.

### **3. Data, model and estimation methodology**

The first goal of this research is to provide a detailed description of Korea's and China's exports to Latin American countries between 2001 and 2019. In this case, data on exports has been collected from the UN-Comtrade database, and classified in five groups, according to the categories proposed by Lall (2000): primary products, resource based manufactures, low-tech, medium-tech

and high-tech manufactures. The classification adopted in this paper follows the three-digit SITC, revision 2.

Following this classification, exports were divided into two large groups, X1 and X2. The first group comprises products classified as primary products, resource-based manufactures and low-technology manufactures (PP, RB and LT, respectively). This means that X1 represents exports with lower technological content. The second group, named X2, includes medium- and high-technology manufactures (MT and HT), which correspond to products with higher technological intensity (Libanio, 2012). Then, export quality index  $EQI_{it}$  was defined as:

$$EQI_{it} = \frac{X2_{it} - X1_{it}}{Total\ exports_{it}} \quad (1)$$

This index ranges from -1 to +1. Lower values are associated with lower technological content of exports. The extreme cases are: a country exports only PP, RB and LT ( $EQI = -1$ ); or a country exports only MT and HT ( $EQI = +1$ ). Therefore, according to the terminology adopted here, the higher the  $EQI$ , the better is the quality (in terms of technological contents) of exports from country  $i$  in period  $t$ .

Next, an index of competition between Korea and China in Latin American markets have been calculated, for the period 2001-2019. The calculation of these indexes follows two different methodologies proposed by Blazquez-Lidoy *et al* (2006):

$$CS = 1 - \frac{1}{2} \sum_n |a_{it}^n - a_{jt}^n| \quad (2)$$

$$CC = \frac{\sum_n a_{it}^n a_{jt}^n}{\sqrt{\sum_n (a_{it}^n)^2 \sum_n (a_{jt}^n)^2}} \quad (3)$$

where  $a_{it}$  and  $a_{jt}$  represent the share of good  $n$  in exports of country  $i$  to Latin America in period  $t$ . In this case, country  $i$  would be Korea, whereas  $j$  would refer to China. If two countries have the same export profile, the  $CS$  and  $CC$  indexes would equal 1. On the other extreme, if there are no similarities between exports from the two countries, the coefficients would approach zero. In the first case, the competition for Latin American markets would be stiff between the two countries, while in the latter case there would be no competition.

Finally, the research aims to estimate the impact of the increasing competition with China as well as of real exchange rate shocks on Korea's exports to Latin America. In this case, export functions have been estimated, including competition indexes as explanatory variables:

$$X_{it} = \alpha_0 X_{it-1} + \alpha_1 RER_t + \alpha_2 CI_{it} + \alpha_3 Y_{it}^* + u_i + \varepsilon_{it} \quad (4)$$

where  $X_{it}$  represents Korean exports to Latin American countries,  $RER_t$  refers to the real exchange rate of the Chinese Renminbi,  $CI_{it}$  represents the index of export competition between China and Korea in Latin American markets (arithmetic mean of the terms  $CS$  and  $CC$  defined above), and  $Y_{it}^*$  represents real gross domestic product of the importing country. The term  $u_i$  is the unobserved heterogeneity or time invariant variables and  $\varepsilon_{it}$  is the vector of iid errors. GDP is measured in constant US dollars and the source of the GDP data is ECLAC (<https://www.cepal.org/pt-br/datos->

[y-estadísticas](#)). The data on real effective exchange rate has been extracted from database World Development Indicators (<https://databank.worldbank.org/source/world-development-indicators>).

The estimation requires an initial transformation in first differences to eliminate the individual effects  $u_i$  and a subsequent estimation by GMM (Generalized Method of Moments) with appropriate instruments to mitigate the correlation between  $X_{it-1}$  and  $\varepsilon_{it}$ .

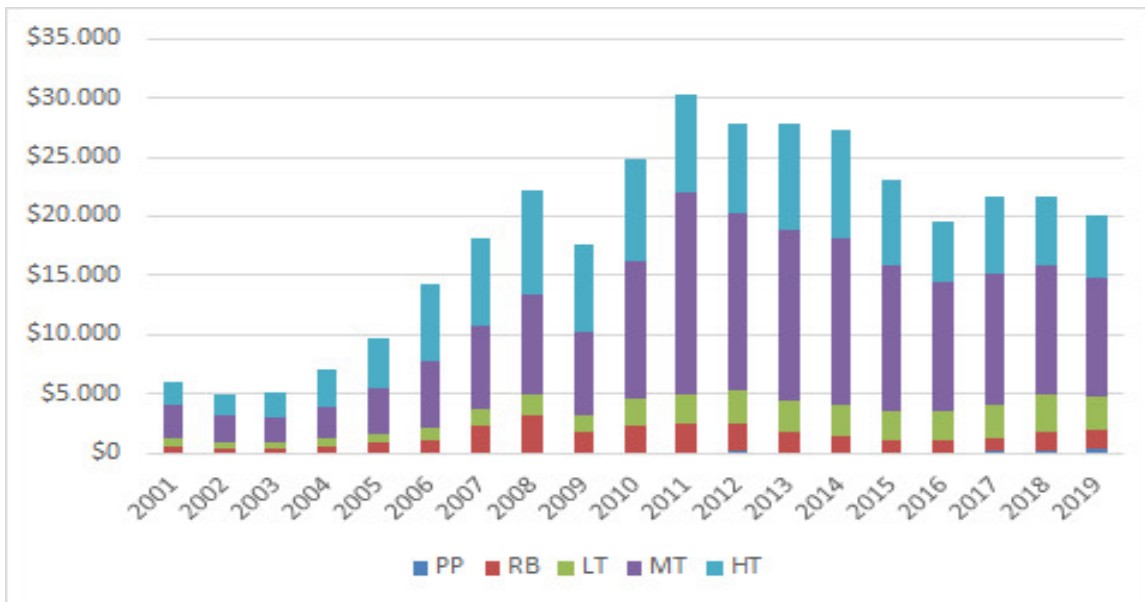
The use of GMM methods in analysis of dynamic panels was refined by Arellano and Bond (1991), Arellano and Bover (1995) and Blundel and Bond (1998). There are at least two major variants of these estimators for dynamic panels, the GMM in first differences (Arellano and Bond, 1991; Arellano & Bover, 1995) and the GMM system estimation (Blundel and Bond, 1995). The first consists of an estimation in first differences, using as instruments the lags of the lagged term and the lags of the exogenous and pre-determined explanatory variables in level.

In this paper, we performed initially OLS levels and Within-Groups (Fixed Effects) estimations of the coefficients. Both estimators for  $\rho$  are biased, the OLS upward and the Within Groups downward. Thus, the coefficient value obtained from the OLS estimation is usually seen as an approximate upper bound whereas the coefficient obtained from the Within Group estimation is regarded as a lower bound (HOEFFLER, 2002; ROODMAN, 2006). Also, we performed GMM first-difference and the System GMM. Because the coefficient value of System GMM showed that there is unit root, we choose the GMM first-difference (FD-GMM) of Arellano & Bond (1991) as the most adequate estimation method.

#### 4. Results and interpretation

Figures 1 and 2 show the evolution of exports from Korea and from China, respectively, to Latin America between 2001 and 2019. For the case of Korea, the data indicates that the total value of Korean exports have increased during the 2000's, reached a peak between 2011-2014, and have declined in recent years. Also, the figure shows that medium- and high-technology goods have been the main components of exports to Latin America during the entire period of analysis.

**Figure 1 - Korea: Exports to selected Latin American countries by technological classification (2001-2019) – US\$ million**



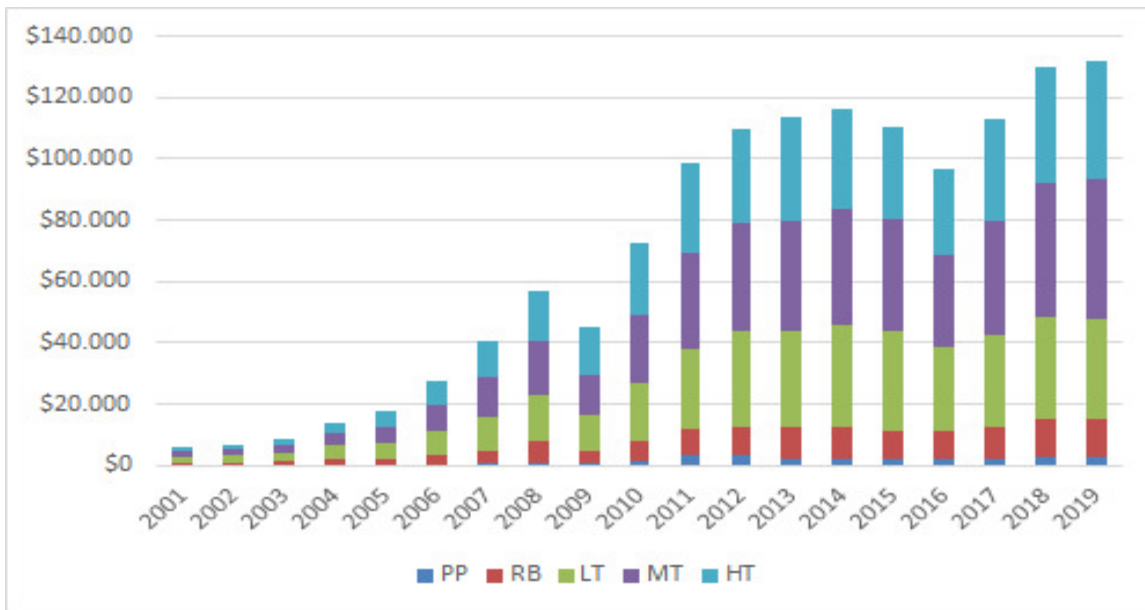
Source: authors' calculations using UN-Comtrade data

In the case of China, there are two important elements to be mentioned. Firstly, it should be noted that total Chinese exports to Latin America have increased substantially over the period – the value of exports in 2019 was 22 times larger than in 2001. Secondly, there has been a relevant change in the composition of Chinese exports over time, with an increase in the share of medium- and high-technology manufactures, and a decline in the other categories – low-tech manufactures, in particular. This move of Chinese exports towards a more sophisticated export profile is the most important aspect to explain the increase in the competition with Korea in Latin American markets.

Lastly, it should be noted that the value of Korea's and China's exports to Latin America were similar in 2001 (around US\$ 5 billion), and that in 2019 Chinese exports are 6.5 times larger than Korean exports to the region. Another interesting information is that global exports from China are 4 times larger than Korea's exports to the world. Comparing the relative export performance of both countries in Latin America to their exports to the rest of the world, one can conclude that China has a better penetration in Latin America than Korea does, in relative terms.

**Figure 2 - China: Exports to selected Latin American countries by technological classification (2001-2019) – US\$ million**



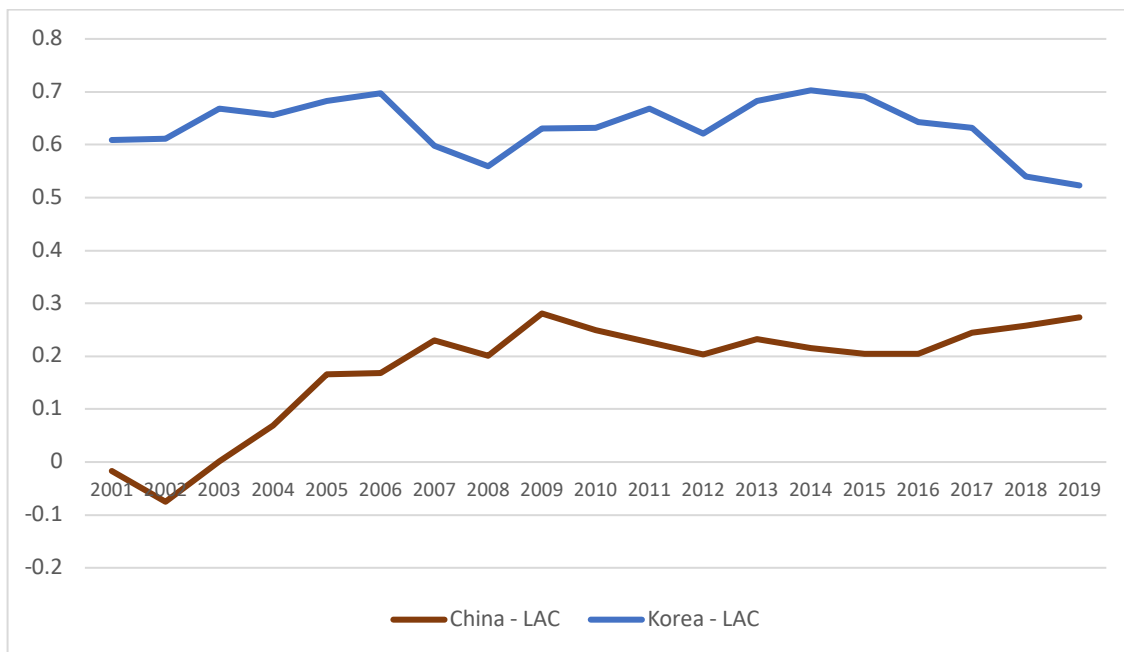


Source: authors' calculations using UN-Comtrade data

The export quality index (EQI) provides a measure of the changes in the composition of exports, in terms of technological content. Figure 3 shows China's and Korea's EQI to twelve Latin American countries between 2001 and 2019. In the early 2000's, China had a negative export quality index, which means lower technological content of Chinese exports, with predominance of PP, RB, and LT goods. Over time, a shift from simpler to more complex products from China explains the increase in the exports quality index. Besides that, the evolution of the EQI illustrates the fast change of the products "Made in China", which were initially associated with a lower technological content.

Korean exports to Latin America, in turn, have shown a high EQI for the entire period of analysis, ranging from +0.52 to +0.7. However, it is clear that the composition of exports from Korea and China to Latin America have become increasingly similar – as measured by the EQI – over time. This result is mainly due to the increase in the exports quality index for China, and it provides evidence of the increasing importance of the China as a competitor of Korea in international trade to Latin America.

**Figure 3 – Export quality index (EQI) for selected Latin American countries (2001-2019)**

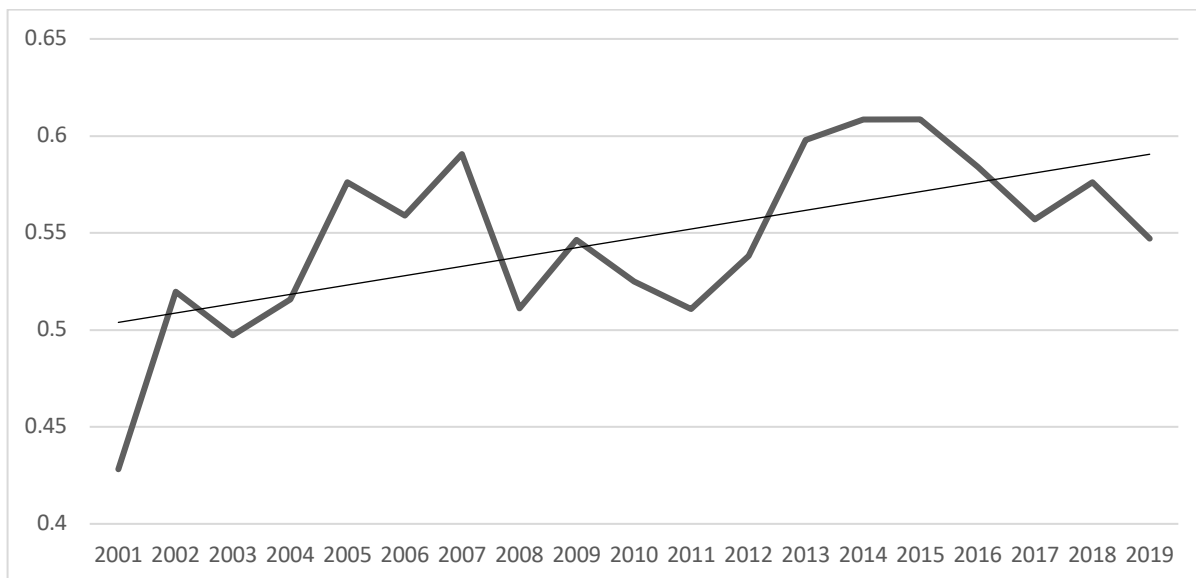


Source: authors' calculations

Figure 4 shows the index of exports competition (Blazquez-Lidoy *et al*, 2006) between Korea and China in selected Latin American countries, between 2001 and 2019. In general, the competition between both countries is increasing during the period of analysis. This means that the similarities between the structure of exports of Korea and China are increasing over time. Interestingly, the index of competition falls after reaching a peak in 2014-2015, suggesting a decline in the similarity of export composition between Korea and China.

One possible explanation for this result is the decline of Korean exports in some selected sectors or groups of products, accompanied by an increase in Chinese exports to the region, in these same sectors. In particular, Korean exports have declined whereas Chinese exports have increased in products such as passenger motor vehicles (SITC 781), heating and cooling equipment and parts (741), ships, boats and floating structures (793), optical instruments and apparatus (871), and optical goods (884).

**Figure 4 – Index of exports competition between Korea and China in Latin America (2001-2019)**



Source: authors' calculations

In order to further investigate the role of the Chinese exchange rate, as well as the competition between China and Korea in exports to Latin America, we proceeded to the estimation of exports functions taking these elements as explanatory variables. Table 1 contains the results of the GMM difference estimation, selected as the most appropriate method, as presented in the previous section of this paper.

**Table 01.** Estimation of exports function, Korea to Latin America (2001-2019)

Dependent variable: Korean exports to Latin America

N=192; T=19

Independent variables	GMM diff	
	Coef	Prob>z
Korean exports <sub>t-1</sub>	.8562258	0.000
Korean exports <sub>t-2</sub>	-.133288	0.000
Real exchange rate	-1.15e+07	0.000
Index of competition	-2.21e+08	0.224
GDP	3303.486	0.000
Instruments		140

Source: Authors' calculation.

The results show that both values of the lagged terms of exports are highly significant. This is the reason to consider two lags of the Korean exports. For the real exchange rate, the negative sign suggests a negative impact from the Chinese exchange rate on Korean exports. This result means that depreciation of the Renminbi lowers export prices for products from China, improving its price competitiveness, and eventually brings about a decline in the share of other exporters (including Korea) in Latin American market. Our results can be associated with the ones presented by Eum (2019), whose main findings are that a depreciation of the Chinese Renminbi reduces Korean exports to OECD member countries. In addition, Eum (2019) finds that the negative spillover effects from a depreciation of the Renminbi are larger when we consider how well Chinese export product quality meets the needs of importers. In our case, as Chinese exchange rate is associated with a negative impact on Korean exports, this means that differences in the quality of products between both countries are not large enough to cancel out the effects of the currency depreciation.

Regarding the index of competition, it was negative but not statistically significant in the estimation. The negative sign confirms what is expected by theory, because it suggests that higher degree of competition with China have brought about negative effects on Korean exports during this period.

As for the GDP of selected Latin American countries, the estimated coefficient is positive and highly significant. This result suggests that Korean exports have benefited from higher growth rates in the region, which is expected by theory.

In sum, our estimation results are for the most part in line with the literature. Firstly, they confirm the relevance of the Chinese exchange rate to the exports from other countries, as in Mattoo, Mishra, and Subramanian (2017), with specific reference to the case of South Korea. In addition, the literature points out that exchange rate shocks tend to have smaller impacts when there is quality differentiation. In our case, the significant exchange rate effects may be associated with the increasing proximity of the composition of exports between China and Korea – i.e. small quality differentiation – as presented by our export quality index and by the index of exports competition between the two countries.

## **5. Concluding remarks**

This paper aimed to examine the competition between China and Korea for export markets in Latin America, from 2001 to 2019. The paper built an index of exports quality for China and Korea, based on the classification by technological intensity (Lall, 2000): primary products, resource-based manufactures, low-tech, medium-tech and high-tech manufactures. Besides that, we calculated an index of competition between Korea and China in Latin American markets, for the period. Then, we estimated an exports function for Korean exports to Latin America by using panel data analysis, in order to further investigate the role of China-Korea competition and of the Chinese exchange rate.

Trade between Korea and Latin American countries have grown at an average annual rate of 13% between 2000 and 2013. In 2013, the region absorbed 6% of Korean exports and originated 3.5% of its imports (ECLAC, 2015). In absolute terms, Korea exported approximately US\$ 20 billion to Latin America in 2019. Also, Korea presents a growing trade surplus with the region over the last two decades. On the other hand, China has increased its role in international trade over the last two decades, and has also changed its exports profile towards more technologically sophisticated goods. As a consequence of such developments, China has increased its competition with Korea's exports in Latin American markets.

The main results of this paper confirm the growing importance of China as a competitor for Korea in Latin America, given China's move towards a more sophisticated export basket, which was captured by the EQI over time. In addition, our estimation results suggest that a depreciation of the Chinese exchange rate and the increase of the competition between China and Korea reduce Korean exports to Latin American countries. On the other hand, the impact of Latin American countries' GDP on Korean exports is positive.

Finally, our research leads to some important economic policy implications for improving Korean exports to Latin America. First, product differentiation, based on innovation and product quality, must be pursued in order to lower the effects of a devalued Chinese exchange rate. In the current scenario, price-competitiveness is still relevant for the region. Second, bilateral trade agreements between Korea and Latin American countries may give Korea additional competitive advantages considering the growing similarity between China's and Korea's export profiles.

## REFERENCES

- Arellano, M.; Bond, S (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, v.58, n.2, 277–297. <https://doi.org/10.2307/2297968>.
- Arellano, M.; Bover, O (1995). Another look at the instrumental variable estimation of error components models. *Journal of Econometrics*, v.68, 29–51. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D).
- Baak, S. J (2014). Do Chinese and Korean products compete in the Japanese market? An investigation of machinery exports. *Journal of the Japanese and International Economies*, n. 34, 256-271. <https://doi.org/10.1016/j.jjie.2014.09.002>.
- Barbosa, A. de F. (2020). A ascensão chinesa, as transformações da economia-mundo capitalista e os impactos sobre os padrões do comércio na América Latina. *Revista Tempo do Mundo*, n. 24, pp. 135-174.
- Bekerman, M.; Dulcich, F. M.; Moncaut, N. C. (2013). Transformações recentes da economia chinesa: impacto sobre suas relações comerciais com a América Latina. *Revista Tempo do Mundo*, v. 5, n. 1, pp. 5-43.
- Blázquez-lidoy, J.; Rodríguez, J.; Santiso, J. (2006). Angel or Demon? China's Trade Impact on Latin American countries. *Cepal Review*, n.90, 15-41.
- Blundell, R.; Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, v.87, n.1, p 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).
- Eclac (Economic Commission for Latin America and the Caribbean). Economic Relations Between Latin America and the Caribbean and the Republic Of Korea: Advances and opportunities. Santiago, Chile: United Nations, 2015.
- Eclac. Economic Commission for Latin American and the Caribbean. CEPALSTAT: Data and statistics. Available in: <https://www.cepal.org/pt-br/datos-y-estadisticas>. Accessed April 10, 2021.

- Eum, J. (2019). Impact of Chinese Renminbi on Korean Exports: Does Quality Matter?. *Bank of Korea WP*, v. 24. <http://dx.doi.org/10.2139/ssrn.3459254>.
- Gallagher, K., Porzecanski, R. (2009). China and the Latin America Commodities Boom: A Critical Assessment. *PERI Working Papers*, n. 192, 1-27.
- Greenaway, D.; Mahabir, A.; Milner, C. (2010). Has China displaced other Asian countries' exports?. In: *China and the World Economy* (pp. 60-90). Palgrave Macmillan, London.
- Hoeffler, A. E. (2002). The Augmented Solow Model and the African Growth Debate. *Oxford Bulletin of Economics and Statistics*, vol. 64, nº 2, p. 135-158. <https://doi.org/10.1111/1468-0084.00016>.
- Kim, E. (2020). A estrutura exportadora da Coreia do Sul e sua vulnerabilidade política e econômica: a análise do Brasil como um mercado alternativo. 2020. Dissertação (Mestrado em Relações Internacionais) - Instituto de Relações Internacionais, University of São Paulo, São Paulo. <https://doi.org/10.11606/D.101.2020.tde23032021-081210>.
- La, J. J.; Shin, W. (2019). Assessment of the Korean-Chinese exports competition in sophisticated markets. *Journal of Korea Trade*, v. 23, n. 2, p. 1-13. <https://doi.org/10.35611/jkt.2019.23.2.1>.
- Lall, S. (2000). The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-98. *Oxford Development Studies*, vol. 28, nº3, p. 337-369. <https://doi.org/10.1080/713688318>.
- Libânio, G. (2012). Quem Tem Medo da China? Análise e implicações para os principais estados brasileiros. *Revista de Economia Contemporânea*, vol. 16, nº2, p. 259-286. <https://doi.org/10.1590/S1415-98482012000200005>.
- Mattoo, A.; Mishra, P.; Subramanian, A. (2017). Beggar-Thy-Neighbor Effects of Exchange Rates: A Study of the Renminbi. *American Economic Journal: Economic Policy*, v. 9, n. 4, p. 344-66. <https://doi.org/10.1257/pol.20150293>.
- Medeiros, C. A.; Cintra, M. R. (2015). Impacto da ascensão chinesa sobre os países latino-americanos. *Brazilian Journal of Political Economy*, v. 35, n. 1, p. 28-42. <https://doi.org/10.1590/0101-31572015v35n01a02>.

- Naughton, B. (2018). *The Chinese Economy: adaptation and growth* (2<sup>a</sup> ed.). Cambridge, MA: MIT Press.
- Nonnenberg, M. J. B. (2013). Exportações e inovação: uma análise para América Latina e Sul-Sudeste da Ásia. *Brazilian Journal of Political Economy*, v. 33, n. 1, pp. 120-145.
- Prazeres, T.; Bohl, D.; Zhang, P. (2021). China-LAC trade: Four scenarios in 2035. *Atlantic Council*. pp. 2 -32.
- Roodman, D. (2006). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, v. 9, n. 1, pp.86-136. <https://doi.org/10.1177/1536867X0900900106>.
- Thorbecke, W. (2017, March). Do South Korean Exports Compete with Chinese Exports in Third Markets?, International Conference on Economic Integration and Economic Growth, Seattle.
- Un Comtrade. UN Comtrade Database. Available in: <https://comtrade.un.org/Data/>. Accessed March 16, 2021.
- World Bank. World Development Indicators Database: total GDP 2002. World Bank, 2019. Available in: <https://databank.worldbank.org/source/world-development-indicators>. Accessed April 02, 2021.